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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,134	01/18/2002	Yoichi Asano	Q68111	3810

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EXAMINER

YUAN, DAH WEI D

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 11/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

062

Office Action Summary

Application No.

10/050,134

Applicant(s)

ASANO ET AL.

Examiner

Dah-Wei D. Yuan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 13-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7 and 9-11 is/are rejected.
- 7) ☒ Claim(s) 4, 8 and 12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other: .

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**POLYMER ELECTROLYTE MEMBRANE, METHOD FOR PRODUCING SAME, AND
MEMBRANE ELECTRODE ASSEMBLY AND POLYMER ELECTROLYTE FUEL
CELL COMPRISING SAME**

Examiner: Yuan

S.N. 10/050,134

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November 13, 2003

Election/Restrictions

1. Applicant's election without traverse of species I-1, claims 1-12, in Paper No. 7 is acknowledged. Thereby, claims 13-40 are withdrawn from consideration.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1,2,5,6,9,10 are rejected under 35 U.S.C. 102(b) as being anticipated by Nolte et al. (Journal of Membrane Science, 83 (1993) 211-220).

With respect to claim 1,2,6,10, Nolte et al. teach a polymer electrolyte membrane of sulfonated poly(arylene ether sulfones) with various sulfonation levels. Figure 2 shows structure of the polymer membrane having aromatic functional groups. The sulfonated poly(arylene ether sulfones) is also treated in hot water (ca. 80°C). See Abstract, pages 211-213. Nolte et al. do not specifically disclose the maximum water absorption in a range of 80-300 weight% based on its

dry weight before the hot water treatment. However, it is the position of the examiner that such properties are inherent, given that the materials recited in both Nolte et al. and the present application having similar chemistry and chemical structure. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999).

With respect to claim 5, Nolte et al. further teach the polymer electrode membrane is sandwiched between two electrode/catalyst in a solid polymer fuel cell. See Figure 1.

With respect to claim 9, Nolte et al. further teach the fuel cell comprising end plates (separator plates) in the membrane electrode assembly. See Figure 1.

4. Claims 1,2,5,6,9,10 are rejected under 35 U.S.C. 102(e) as being anticipated by Helmer-Metzmann et al. (US 6,096,856) as evidenced by Nolte et al. (Journal of Membrane Science, 83 (1993) 211-220).

With respect to claim 1,2,6,10 Helmer-Metzmann et al. teach a polymer electrolyte membrane of polyarylene sulfide having aromatic unit. A chlorosulfonated material is suspended in water and the suspension is boiled (a hot water treatment), so that the polyarylene sulfide-sulfonic acid chloride is converted into the polyarylene sulfide-sulfonic acid. See Column 1, Lines 9-61; Column 2, Lines 6-25,64-67. Helmer-Metzmann et al. do not specifically disclose the maximum water absorption in a range of 80-300 weight% based on its dry weight before the hot water treatment. However, it is the position of the examiner that such properties

are inherent, given that the materials recited in both Helmer-Metzmann et al. and the present application having similar chemistry and chemical structure. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999).

With respect to claim 5,9, Helmer-Metzmann et al. further teach the polymer electrode membrane can be used in electrochemical cells, in particular in fuel cells and electrolysis cells. See Column 3, Lines 18-31. The fuel cells inherently comprise electrode and separator plates as evidenced by Nolte et al. See Figure 1.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3,7,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolte et al. (Journal of Membrane Science, 83 (1993) 211-220) as applied to claims 1,2,5,6,9,10 above.

As discussed in Paragraph 3, Nolte et al. disclose Applicant's invention essentially as claimed, with the exception that the time for hot water treatment is not discussed. However, it would have been within the skill of the ordinary artisan to adjust the length of time for the hot water treatment depending on the degree of purity required for the resulting polymer electrolyte

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membrane. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

7. Claims 3,7,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helmer-Metzmann et al. (US 6,096,856) as applied to claims 1,2,5,6,9,10 above.

As discussed in Paragraph 4, Helmer-Metzmann et al. disclose Applicant's invention essentially as claimed, with the exception that the time for hot water treatment is not discussed. However, it would have been within the skill of the ordinary artisan to adjust the length of time for the hot water treatment depending on the degree of purity required for the resulting polymer electrolyte membrane. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

Allowable Subject Matter

8. Claims 4,8,12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 4,8,12 would be allowable because the prior art does not disclose or suggest the polymer comprising 30-95 mol% of a first aromatic monomer unit represented by the formula (1) and 70-5 mol% of a second aromatic monomer unit represented by the chemical formula (2) as stated in the claim.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (703) 308-0766. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Dah-Wei D. Yuan
November 13, 2003

A handwritten signature in black ink, appearing to read 'D. Yuan', followed by a long horizontal flourish.